

ACHIEVING SUSTAINABLE WATER SUPPLY THROUGH INTEGRATED REGIONAL WATER SUPPLY PLANNING, A CASE STUDY: NORTHEAST FLORIDA WATER SUPPLY PLANNING AREA

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REFERENCE: *Proceedings of the 2011 Georgia Water Resources Conference*, held April 11–13, 2011, at the University of Georgia.

Abstract. In northeastern counties of Florida, traditional groundwater sources are not sustainable to meet future water demands. Recent studies indicate potentially unacceptable environmental impacts associated with using traditional groundwater sources to meet water projected water demands in 2030. A coordinated regional planning approach was developed to meet future water demands. The approach included a public participation process involving the states of Georgia and Florida, regional water management districts, public and private public water supply utilities, local governments and individual citizens in development of two regional water supply plans for northeast Florida. This presentation focuses on three challenging components of the planning process: the application of numeric groundwater models - several numerical groundwater models were used in the planning process to establish baseline aquifer conditions and project potential water resource and environmental impacts associated with future withdrawals; a coordinated stakeholder engagement process - a series of public and technical stakeholder group meetings were held to describe the planning process and to receive public and technical input; the relationship between water use permitting and regional water supply planning - the project sponsors for the planning processes were also permitting agencies for public water supply utilities in the region. This complex relationship with stakeholders influenced the planning process in several ways including many lessons learned. This presentation offers details on the coordinated planning process used to develop regional water supply plans for the northeast area of Florida that protect environmental minimum flows and levels and wetlands while identifying and assessing alternative water supply sources necessary to establish sustainable sources of water to meet future demands through the year 2030.

BACKGROUND

The St. Johns River Water Management District (SJRWMD) and Suwannee River Water Management District (SRWMD) are two of five water management districts in Florida (Figure 1) established by Florida Statute (F.S.). Regional water supply planning in Florida has been the responsibility of Florida's water management districts pursuant to the requirements of Chapter 373, F.S.

Because of their shared boundaries and the potential of cross-district impacts to water resources, the two districts decided to pursue a coordinated regional water supply planning effort. SJRWMD and SRWMD agreed to work together in the development of their respective regional water supply plans. The coordination included similar project timelines, common analytic tools and methodologies, and coordinated public engagement efforts.

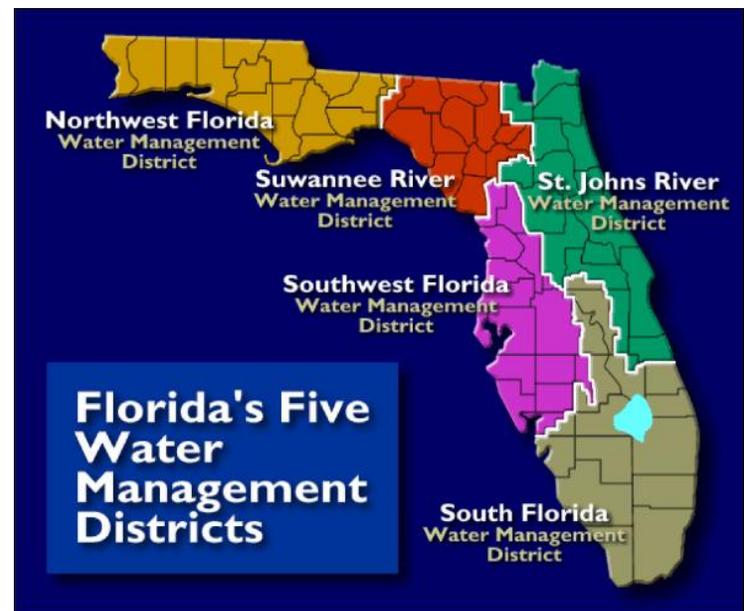


Figure 1. Florida's Five Water Management Districts

Legislative Requirements. Subsection 373.709(1), F.S., states that: The governing board of each water management district shall conduct water supply planning for any water supply planning region within the district identified in the appropriate district water supply plan under Section 373.709, F.S. where it determines that existing sources of water are not adequate to supply water for all existing and future reasonable-beneficial uses and to sustain the water resources and related natural systems for the planning period.

SRWMD determined that the Upper Santa Fe River Basin water demands cannot be met using traditional sources without unacceptable impacts to natural and water resources and therefore should be designated as a water supply planning region. SJRWMD determined that future water demands in the northeast region of their district could not be met using traditional sources and therefore required a water supply planning plan. As a result, both water management districts decided to conduct a coordinated water supply planning effort for the northeast Florida region including portions of both districts.

Planning Region. Figure 2 presents the Northeast Florida Water Supply Planning Region covered by the coordinated water supply planning efforts. The portion of SJRWMD included in this area is designated the Northern Water Supply Planning Region and the SRWMD area is designated the Upper Santa Fe River Basin (USFRB) Water Supply Planning Region. Each district chose to prepare individual water supply plans for their respective regions. However, the districts chose to pursue a coordinated planning process using similar methodologies, common analytic tools and overlapping public engagement efforts when appropriate.

Water Demands. Table 1 below provides projected water demands for both water management districts at-large and each respective planning region within the Northeast Florida (NEF) Water Supply Planning Region. These projections are considered preliminary because the respective final planning documents have not been formally approved by the Governing Boards of the water management districts.

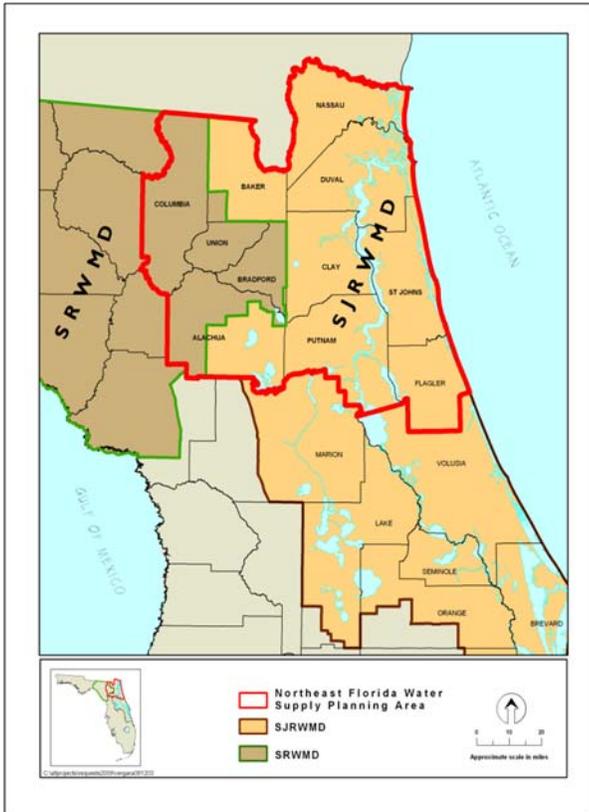


Figure 2. Northeast Florida Water Supply Planning Region

YEAR	SJRWMD		SRWMD	
	DISTRICT-WIDE	NORTHERN WATER SUPPLY PLANNING REGION	DISTRICT-WIDE	USFRB WATER SUPPLY PLANNING REGION
2010	1,313 MGD	440 MGD	256-263 MGD	23 MGD
2030	1,580 MGD	570 MGD	266-326 MGD	27-31 MGD

Table 1. Water Demand Projections (million gallons per day)

Application of Numeric Groundwater Models. The primary tool used to determine potential impacts of future water demands in the NEF Water Supply Planning Region was the NEF model. The NEF model was developed by SJRWMD and is based on the United States Geological Survey (USGS) modular finite-difference flow (MODFLOW) model. The NEF model was subjected to a formal peer review and revised based on that review. SJRWMD applied the NEF model using their staff while the SRWMD hired a consultant to run the model.

The NEF model was used to:

- Evaluate the cumulative impact of 2030 groundwater withdrawals;
- Provide an evaluation of the magnitude of individual user contribution to the 2030 cumulative impact;
- Provide a series of simulations for the years 1995, 2004 and 2030 of projected water demand to assess potential constraint methods; and,
- Identify limits of water level change at which unacceptable impacts are likely to occur.

Natural systems constraints were applied to assess potential impacts. Criteria were developed and applied for native vegetation (wetlands), lakes, springs and minimum flows and levels for selected water bodies. A groundwater quality constraint also was applied to measure potential saltwater intrusion impacts.

The primary NEF model output, used to measure potential impacts of future water withdrawals, was the projected change in the elevation of the potentiometric surface of the Floridan Aquifer System (Figure 3).

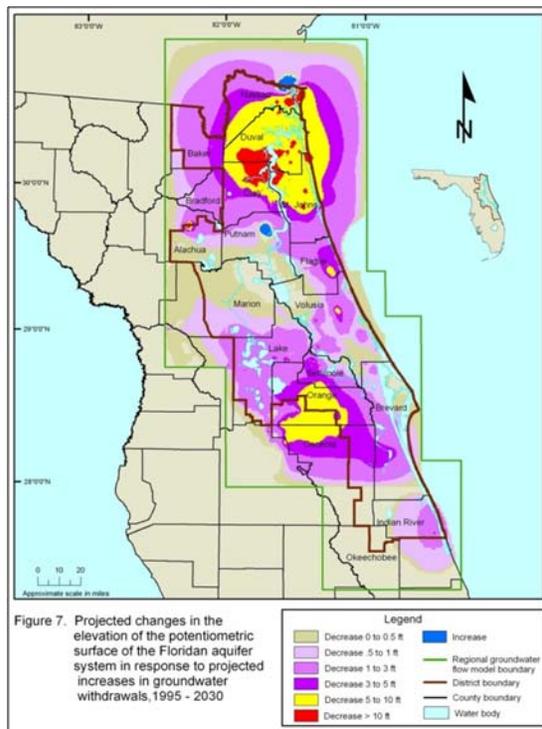


Figure 3. Changes in the Elevation of the Potentiometric Surface of the Floridan Aquifer System

Integrated Stakeholder Engagement Process.

SJRWMD and SRWMD agreed early on in the coordinated water supply planning process to have an integrated stakeholder engagement process. Both districts believed that it was very important to present a unified effort to the public and to increase efficiencies by combining public meetings and presentations.

The Northeast Florida Water Supply Plan Group (Work Group) was established as the primary public engagement process for the coordinated water supply planning process. A series of six (6) publicly noticed open meetings were held through calendar year 2010 during which district staff and consultants presented technical and process information as well as solicited input from the public. Staff from SJRWMD and SRWMD were at all meetings and available to respond to questions and comments from the public.

Subgroups also were established to address the following specific topics: water use conservation, groundwater modeling, alternative water supply project identification, and minimum flows and levels. Members of the public and stakeholders with specific interests in these topics were encouraged to attend these topic-specific meetings. Results from these subgroups were presented at the Work Group meetings.

Attendees at all Work Group and subgroup meetings were encouraged to sign-in at the meetings and include an email address so that they could receive draft

documents and notices of future meetings. Summaries of all meetings including sign-in sheets, handout materials, draft documents and presentations were placed in a SJRWMD-sponsored file-transfer protocol (FTP) site and the link to the site was distributed by email to all participants who had provided email addresses. Audio recordings were made of all Work Group meetings and provided by request.

Periodic updates were provided to the SJRWMD and SRWMD Governing Boards. In addition, presentations were made to any local government governing body that made requests and several informational meetings were held with representatives of the Georgia Environmental Protection Division.

Relationship between Water Use Permitting and Regional Water Supply Planning.

Water in Florida is owned by the State. Its use is permitted by the State as administered by the water management districts. In order for a consumptive use permit (CUP) to be issued, it must meet a three-pronged test:

1. It must be a reasonable and beneficial use (projected demands are consistent with the regional water supply plan and local government comprehensive plans).
2. It cannot interfere with existing legal users.
3. It must be consistent with the public interests (including harm to the environment, saltwater intrusion, wetlands, movement of pollution, etc).

There is a direct linkage between regional water supply plans prepared by water management districts and CUPs issued by the same water management districts. The adopted water supply plan provides input and guidance during review of requested CUPs.